ARIZONA WATER COMPANY

DOCKET NO. W-01445A-02-0619

COST OF CAPITAL
DIRECT TESTIMONY

OF

WILLIAM A. RIGSBY

ON BEHALF OF

THE

RESIDENTIAL UTILITY CONSUMER OFFICE

JULY 8, 2003

16

INTRODUCTION

Q. Please state your name, occupation, and business address.

A. My Name is William A. Rigsby. I am a Public Utilities Analyst V employed by the Residential Utility Consumer Office ("RUCO") located at 1110 W. Washington, Suite 220, Phoenix, Arizona 85007.

Q. Please state your educational background and your qualifications in the field of utilities regulation.

A. Appendix I, which is attached to this testimony, describes my educational background and also includes a list of the rate cases and regulatory matters that I have been involved with.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to present recommendations that are based on my analysis of Arizona Water Company's ("Arizona Water" or "Company") application for a permanent rate increase ("Application") for the Company's Eastern Group. The Eastern Group is comprised of the Company's Apache Junction, Bisbee, Miami, Oracle, San Manuel, Sierra Vista, Superior, and Winkelman systems. Arizona Water's Application was filed with the Arizona Corporation Commission ("ACC" or "Commission") on August 14, 2002. During the 2001 test year ("Test

1   Year") the Company's Eastern Group provided water service to

2   approximately 29,236 customers.

3

4 Q. Please explain your role in RUCO's analysis of Arizona Water's

5   application.

6 A. I reviewed Arizona Water's application and performed a cost of capital

7   analysis to determine a fair rate of return on Arizona Water's equity

8   capital, cost of debt, and capital structure.   The recommendations

9   contained in this testimony are based on information obtained from the

10   Company through written data requests and on research that I conducted

11   during my cost of capital analysis. In addition, I also had the opportunity

12   to observe each of the aforementioned systems during a tour of the

13   Eastern Group that was conducted in early January 2003 by Company

14   witness and Vice President of Engineering for Arizona Water, Michael J.

15   Whitehead. As is common in cases that involve an operating segment or

16   wholly owned subsidiary of a public utility, my cost of capital analysis was

17   performed on a total company basis as opposed to concentrating on the

18   Eastern Group alone or on any one particular system within the Eastern

19   Group.

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1   Q.   Were you also responsible for conducting an analysis of Arizona Water's

2   proposed revenue level, rate base, and rate design?

3   A.   Yes. I have also filed, under separate cover, direct testimony on revenue

4   and rate base issues associated with the Apache Junction, Bisbee, Miami

5   and Superior systems. My direct testimony on these systems also

6   contains RUCO's rate design recommendations for the entire Eastern

7   Group. The revenue and rate design issues associated with the Oracle,

8   San Manuel, Sierra Vista and Winkelman systems will be addressed in the

9   direct testimony of RUCO witness Timothy J. Coley.

10

11   Q.   What areas will you address in your testimony?

12   A.   I will address the cost of capital issues associated with the case.

13

14   Q.   Please identify the exhibits that you are sponsoring.

15   A.   I am sponsoring Schedules WAR-1 through WAR-10.

16

17   **SUMMARY OF TESTIMONY AND RECOMMENDATIONS**

18   Q.   Briefly summarize how your cost of capital testimony is organized.

19   A.   My cost of capital testimony is organized into four sections. First, I will

20   present the findings of my cost of equity capital analysis, in which I utilized

21   both the discounted cash flow ("DCF") and capital asset pricing model

22   ("CAPM") methodologies. These are the two most commonly used

1   methods for calculating the cost of equity capital in rate case proceedings

2   and are generally regarded as the most reliable[1]. In this first section I will

3   also provide a brief overview of the current economic climate that Arizona

4   Water is operating in. Second, I will explain how I arrived at my

5   recommended cost of debt. Third, I will compare my recommended

6   capital structure with the Company proposed capital structure. Fourth, I

7   will comment on Arizona Water's cost of capital testimony. Schedules

8   WAR-1 through WAR-10 support my cost of capital analysis.

9

10   Q.   Please summarize the recommendations and adjustments that you will

11   address in your testimony.

12   A.   Based on the results of my analysis of Arizona Water, I am making the

13   following recommendations:

14

15   Cost of Equity Capital – I am recommending a 9.18 percent cost of equity

16   capital. The 9.18 percent figure is based on the results of my cost of

17   equity analysis, which used both the DCF and CAPM methodologies.

18

19   Cost of Short-Term Debt – I am recommending a 4.00 percent cost of

20   short-term debt. This 4.00 percent figure is based on information provided

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[1] A. Lawrence Kolbe and James A Read Jr., The Cost of Capital – Estimating the Rate of Return for Public Utilities, The MIT Press: Cambridge, Massachusetts, 1984, pp. 35-94.

4

1   by the Company on its post-test year short-term debt position as of

2   December 31, 2002.

3

4   <u>Cost of Long-Term Debt</u> – I am recommending an 8.44 percent cost of

5   long-term debt. This 8.44 percent figure is based on my review of the

6   method used by Arizona Water to arrive at the Company-proposed

7   cost of debt, and the terms associated with Arizona Water's Series I

8   through K general mortgage bond issues.

9

10   <u>Common Equity</u> – I am recommending that the December 31, 2002 post-

11   test year level of $52,916,454 in common equity, be adopted by the ACC.

12

13   <u>Cost of Capital</u> – Based on the results of my capital structure, cost of

14   common equity, and debt analyses, I am recommending an 8.66 percent

15   cost of capital for Arizona Water. This figure represents the weighted cost

16   of both the Company's debt and common equity.

17

18 Q. Why do you believe that your recommended 8.66 percent cost of capital is

19   an appropriate rate of return for Arizona Water to earn on its invested

20   capital?

21 A. The 8.66 percent cost of capital figure that I have recommended meets

22   the criteria established in the landmark Supreme Court cases of <u>Bluefield</u>

1   <u>Water Works & Improvement Co. v. Public Service Commission of West</u>

2   <u>Virginia</u> (262 U.S. 679, 1923) and <u>Federal Power Commission v. Hope</u>

3   <u>Natural Gas Company</u> (320 U.S. 391, 1944). Simply stated, these two

4   cases affirmed that a public utility, that is efficiently and economically

5   managed, is entitled to a return on investment that instills confidence in its

6   financial soundness, allows the utility to attract capital, and also allows the

7   utility to perform its duty to provide service to ratepayers. The rate of

8   return adopted for the utility should also be comparable to a return that

9   investors would expect to receive from investments with similar risk.

10   The <u>Hope</u> decision allows for the rate of return to cover both the operating

11   expenses and the "capital costs of the business" which includes interest

12   on debt and dividend payment to shareholders. This is predicated on the

13   belief that, in the long run, a company that cannot meet its debt obligations

14   and provide its shareholders with an adequate rate of return will not

15   continue to supply adequate public utility service to ratepayers.

16

17   Q.   Do the <u>Bluefield</u> and <u>Hope</u> decisions indicate that a rate of return sufficient

18   to cover all operating and capital costs is guaranteed?

19   A.   No. Neither case guarantees a rate of return on utility investment. What

20   the <u>Bluefield</u> and <u>Hope</u> decisions *do allow*, is for a utility to be provided

21   with the *opportunity* to earn a reasonable rate of return on its investment.

22   That is to say that a utility, such as Arizona Water, is provided with the

1   opportunity to earn an appropriate rate of return if the Company's

2   management exercises good judgment and manages its assets and

3   resources in a manner that is both prudent and economically efficient

4

COST OF EQUITY CAPITAL

Q.   What is your recommended cost of equity capital for Arizona Water?

A.   Based on the results of my DCF and CAPM analyses, which ranged from

6.79 percent to 9.18 percent, I am recommending a 9.18 percent cost of

equity capital for Arizona Water. The 9.18 percent figure was derived from

my DCF analysis, which should be given the greatest weight in

establishing a final estimate.

Discounted Cash Flow (DCF) Method

Q.   Please explain the DCF method that you used to estimate Arizona Water's

cost of equity capital.

A.   The DCF method employs a stock valuation model that is often referred to

as either the constant growth valuation model or the Gordon[2] model.

Simply stated, the DCF model is based on the premise that the current

price of a given share of common stock is determined by the present value

of all of the future cash flows that will be generated by that share of

common stock. The rate that is used to discount these cash flows back to

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[2] Named after Dr. Myron J. Gordon, the professor of finance who developed the model.

1   their present value is often referred to as the investor's cost of capital (i.e.

2   the cost at which an investor is willing to forego other investments in favor

3   of the one that he or she has chosen).

4

5   Another way of looking at the investor's cost of capital is to consider it from

6   the standpoint of a company that is offering its shares of stock to the

7   investing public. In order to raise capital, through the sale of common

8   stock, a company must provide a required rate of return on its stock that

9   will attract investors to commit funds to that particular investment. In this

10   respect, the terms "cost of capital" and "investor's required return" are one

11   in the same. For common stock, this required return is a function of the

12   dividend that is paid on the stock. The investor's required rate of return

13   can be expressed as the percentage of the dividend that is paid on the

14   stock (dividend yield) plus an expected rate of future dividend growth.

15   This is illustrated in mathematical terms by the following formula:

16

17
$$k = (D_1 \div P_0) + g$$

18   where: k =   the required return (cost of equity, equity

19   capitalization rate),

20          $D_1 \div P_0$ =   the dividend yield of a given share of stock

1   calculated by dividing the expected dividend by

2   the current market price of the given share of

3   stock, and

4   g =   the expected rate of future dividend growth.

5

6   This formula is the basis for the standard growth valuation model that I

7   used to determine Arizona Water's cost of equity capital. It is similar to

8   the model that was used by the Company.

9

10   Q.   In determining the rate of future dividend growth for Arizona Water, what

11   assumptions did you make?

12   A.   There are two primary assumptions regarding dividend growth that must

13   be made when using the DCF method. First, dividends will grow by a

14   constant rate into perpetuity, and second, the dividend payout ratio will

15   remain at a constant rate. Both of these assumptions are predicated on

16   the traditional DCF model's basic underlying assumption that a company's

17   earnings, dividends, book value and share growth all increase at the same

18   constant rate of growth into infinity. Given these assumptions, if the

19   dividend payout ratio remains constant, so does the earnings retention

20   ratio (the percentage of earnings that are retained by the company as

21   opposed to being paid out in dividends). This being the case, a

22   company's dividend growth can be measured by multiplying its retention

1   ratio (1 - dividend payout ratio) by its book return on equity. This can be

2   stated as g = b x r.

3

4 Q. Would you please provide an example that will illustrate the relationship

5   that earnings, the dividend payout ratio and book value have with dividend

6   growth?

7 A. RUCO consultant Stephen Hill illustrated this relationship in a Citizens

8   Utilities Company 1993 rate case by using a hypothetical utility.[3]

9

10   Table I

	Year 1	Year 2	Year 3	Year 4	Year 5	Growth
Book Value	$10.00	$10.40	$10.82	$11.25	$11.70	4.00%
Equity Return	10%	10%	10%	10%	10%	N/A
Earnings/Sh.	$1.00	$1.04	$1.082	$1.125	$1.170	4.00%
Payout Ratio	0.60	0.60	0.60	0.60	0.60	N/A
Dividend/Sh	$0.60	$0.624	$0.649	$0.675	$0.702	4.00%

17

18   Table I of Mr. Hill's illustration presents data for a five-year period on his

19   hypothetical utility. In Year 1, the utility had a common equity or book

20   value of $10.00 per share, an investor-expected equity return of ten

21   percent, and a dividend payout ratio of sixty percent. This results in

22   earnings per share of $1.00 ($10.00 book value x 10 percent equity return)

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[3] Citizens Utilities Company, Arizona Gas Division, Docket No. E-1032-93-111, Prepared
Testimony, dated December 10, 1993, p. 25.

1   and a dividend of $0.60 ($1.00 earnings/sh. x 0.60 payout ratio) during

2   Year 1. Because forty percent (1 - 0.60 payout ratio) of the utility's

3   earnings are retained as opposed to being paid out to investors, book

4   value increases to $10.40 in Year 2 of Mr. Hill's illustration. Table I

5   presents the results of this continuing scenario over the remaining five-

6   year period.

7   The results displayed in Table I demonstrate that under "steady-state" (i.e.

8   constant) conditions, book value, earnings and dividends all grow at the

9   same constant rate. The table further illustrates that the dividend growth

10   rate, as discussed earlier, is a function of (1) the internally generated

11   funds or earnings that are retained by a company to become new equity,

12   and (2) the return that an investor earns on that new equity. The DCF

13   dividend growth rate, expressed as $g = b \times r$, is also referred to as the

14   internal or sustainable growth rate.

15

16 Q.   If earnings and dividends both grow at the same rate as book value,

17   shouldn't that rate be the sole factor in determining the DCF growth rate?

18 A.   No. Possible changes in the expected rate of return on either common

19   equity or the dividend payout ratio make earnings and dividend growth by

20   themselves unreliable. This can be seen in the continuation of Mr. Hill's

21   illustration on a hypothetical utility.

22

1

Table II

	Year 1	Year 2	Year 3	Year 4	Year 5	Growth
Book Value	$10.00	$10.40	$10.82	$11.47	$12.158	5.00%
Equity Return	10%	10%	15%	15%	15%	10.67%
Earnings/Sh	$1.00	$1.04	$1.623	$1.720	$1.824	16.20%
Payout Ratio	0.60	0.60	0.60	0.60	0.60	N/A
Dividend/Sh	$0.60	$0.624	$0.974	$1.032	$1.094	16.20%

In the example displayed in Table II, a sustainable growth rate of four percent[4] exists in Year 1 and Year 2 (as in the prior example). In Year 3, Year 4 and Year 5, however, the sustainable growth rate increases to six percent.[5] If the hypothetical utility in Mr. Hill's illustration were expected to earn a fifteen-percent return on common equity on a continuing basis, then a six percent long-term rate of growth would be reasonable. However, the compound growth rates for earnings and dividends, displayed in the last column, are 16.20 percent. If this rate were to be used in the DCF model, the utility's return on common equity would be expected to increase by fifty percent every five years, [(15 percent ÷ 10 percent) − 1]. This is clearly an unrealistic expectation.

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[4] [(Year 2 Earnings/Sh − Year 1 Earnings/Sh) ÷ Year 1 Earnings/Sh] = [($1.04 - $1.00) ÷ $1.00] = [$0.04 ÷ $1.00] = 4.00%

[5] [(1 − Payout Ratio) x Rate of Return] = [(1 - 0.60) x 15.00%] = 0.40 x 15.00% = 6.00%

1   Although it is not illustrated in Mr. Hill's hypothetical example, a change in

2   only the dividend payout ratio will eventually result in a utility paying out

3   more in dividends than it earns. While it is not uncommon for a utility in

4   the real world to have a dividend payout ratio that exceeds one hundred

5   percent on occasion, it would be unrealistic to expect the practice to

6   continue over a sustained long-term period of time.

7

8 Q.   Other than the retention of internally generated funds, as illustrated in Mr.

9   Hill's hypothetical example, are there any other sources of new equity

10   capital that can influence an investor's growth expectations for a given

11   company?

12 A.   Yes, a company can raise new equity capital externally. The best

13   example of external funding would be the sale of new shares of common

14   stock. This would create additional equity for the issuer and is often the

15   case with utilities that are either in the process of acquiring smaller

16   systems or providing service to rapidly growing areas.

17

18 Q.   How does external equity financing influence the growth expectations held

19   by investors?

20 A.   Rational investors will put their available funds into investments that will

21   either meet or exceed their given cost of capital (i.e. the return earned on

22   their investment). In the case of a utility, the book value of a company's

1   stock usually mirrors the equity portion of its rate base (the utility's earning

2   base). Because regulators allow utilities the opportunity to earn a

3   reasonable rate of return on rate base, an investor would take into

4   consideration the effect that a change in book value would have on the

5   rate of return that he or she would expect the utility to earn. If an investor

6   believes that a utility's book value (i.e. the utility's earning base) will

7   increase, then he or she would expect the return on the utility's common

8   stock to increase. If this positive trend in book value continues over an

9   extended period of time, an investor would have a reasonable expectation

10 for sustained long-term growth.

11

12 Q. Please provide an example of how external financing affects a utility's

13   book value of equity.

14 A. As I explained earlier, one way that a utility can increase its equity is by

15   selling new shares of common stock on the open market. If these new

16   shares are purchased at prices that are higher than those shares sold

17   previously, the utility's book value per share will increase in value. This

18   would increase both the earnings base of the utility and the earnings

19   expectations of investors. However, if new shares sold at a price below

20   the pre-sale book value per share, the after-sale book value per share

21   declines in value. If this downward trend continues over time, investors

22   might view this as a decline in the utility's sustainable growth rate and will

1 have lower expectations regarding growth. Using this same logic, if a new

2 stock issue sells at a price per share that is the same as the pre-sale book

3 value per share, there would be no impact on either the utility's earnings

4 base or investor expectations.

5

6 Q. Please explain how the external component of the DCF growth rate is

7   determined.

8 A. In his book, The Cost of Capital to a Public Utility,[6] Dr. Myron Gordon, the

9   individual responsible for the development of the DCF or constant growth

10   model, identified a growth rate that includes both expected internal and

11   external financing components. The mathematical expression for Dr.

12   Gordon's growth rate is as follows:

13

14                              $$g = (br) + (sv)$$

15   where: g   =   DCF expected growth rate,

16   b   =   the earnings retention ratio,

17   r   =   the return on common equity,

18   s   =   the fraction of new common stock sold that

19   accrues to a current shareholder, and

20   v   =   funds raised from the sale of stock as a fraction

21   of existing equity.

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[6] Gordon, M.J., The Cost of Capital to a Public Utility, East Lansing, MI: Michigan State University, 1974, pp. 30-33.

1   and   v   = $1 - [(BV) \div (MP)]$

2   where: BV   =   book value per share of common stock, and

3   MP   =   the market price per share of common stock.

4

5   Q.   Did you include the effect of external equity financing on long-term growth

6   rate expectations in your analysis of expected dividend growth for the DCF

7   model?

8   A.   Yes. The external growth rate estimate (sv) is displayed on Page 1 of

9   Schedule WAR-5, where it is added to the internal growth rate estimate

10   (br) to arrive at a final sustainable growth rate estimate.

11

12   Q.   Please explain why your calculation of external growth on page 2 of

13   Schedule WAR-5, is the current market-to-book ratio averaged with 1.0 in

14   the equation $[(M \div B) + 1] \div 2$?

15   A.   The market price of a utility's common stock will tend to move toward book

16   value, or a market-to-book ratio of 1.0, if regulators allow a rate of return

17   that is equal to the cost of capital (one of the desired effects of regulation).

18   As a result of this situation, I used $[(M \div B) + 1] \div 2$ as opposed to the

19   current market-to-book ratio by itself to represent investor's expectations

20   that, in the future, a given utility will achieve a market-to-book ratio of 1.0.

21

1   Q.   In determining your dividend growth rate estimate, you analyzed the data

2   on three water companies. Why did you use this methodology as

3   opposed to a direct analysis of Arizona Water?

4   A.   One of the problems in performing this type of analysis is that the utility

5   applying for a rate increase is not always a publicly traded company, as is

6   the case with Arizona Water. Because there is no financial data available

7   on dividends paid on *publicly held* shares[7] of Arizona Water common

8   stock or the historical market prices of the Company's common stock, it

9   was necessary to create a proxy by analyzing publicly traded water

10   companies with similar risk characteristics.

11

12   Q.   What criteria did you use in selecting the water companies that make up

13   your proxy for Arizona Water?

14   A.   Each of the water companies used in the proxy are followed by Value Line

15   Investment Survey ("Value Line") and comprise Value Line's Water Utility

16   Industry segment of the U.S. economy.

17

18   Q.   Are these the same water companies that Arizona Water used in its

19   application?

20   A.   Yes, Arizona Water used all of the water companies included in my proxy.

21

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[7] In the case of Arizona Water, the Company is a closely held corporation that pays dividends on shares of common stock that are not publicly traded.

17

1 Q. Are there any other advantages to the use of a proxy?

2 A. Yes. As I noted earlier, the U.S. Supreme Court ruled in the <u>Hope</u>

3   decision that a utility is entitled to earn a rate of return that is

4   commensurate with the returns on investments of other firms with

5   comparable risk. The proxy technique that I have used derives that rate of

6   return. One other advantage to using a sample of companies is that it

7   reduces the possible impact that any undetected biases, anomalies, or

8   measurement errors may have on the DCF growth estimate.

9

10 Q. Please explain your DCF growth rate calculations for the sample

11   companies used in your proxy.

12 A. Schedule WAR-6 provides retention ratios, returns on book equity, internal

13   growth rates, book values per share, numbers of shares outstanding, and

14   the compounded share growth for each of the utilities included in the

15   sample for the period 1998 to 2002. Schedule WAR-6 also includes Value

16   Line's projected 2003, 2004, and 2006-2008 values for the retention ratio,

17   equity return, book value per share growth rate, and number of shares

18   outstanding.

19

20

21

22

1 Q. Please describe how you used the information displayed in Schedule

2   WAR-6 to estimate each comparable utility's dividend growth rate?

3 A. In explaining my analysis, I will use American States Water Company,

4   NYSE symbol AWR, as an example. The first dividend growth component

5   that I evaluated was the internal growth rate. I used the "b x r" formula

6   (page 10) to multiply AWR's earned return on common equity by its

7   earnings retention ratio for each year 1998 through 2002 to derive the

8   utility's annual internal growth rates. I used the mean average of this five-

9   year period as a benchmark against which I compared the 2003 internal

10   growth rate and projected growth rate trends provided by Value Line.

11   Because an investor is more likely to be influenced by recent growth

12   trends, as opposed to historical averages, the five-year mean noted earlier

13   was used only as a benchmark figure. As shown on Schedule WAR-6,

14   AWR's sustainable internal growth rate averaged 2.99 percent from 1998

15   to 2002. This average 2.99 percent figure reflects an upward trend that

16   occurred in the first four years of the observation period followed by a 7.00

17   percent drop to 3.33% recorded in 2002. During the 1998-2001 time

18   frame, the company's growth rate consistently increased from a low of

19   2.09% in 1998, to a high of 3.59% in 2001. Value Line is predicting a

20   further decline to 3.13% for 2003 with projected increases ranging from

21   3.60% in 2004 to 4.94% during the 2006-2008 time frame. However, after

1   weighing Value Line's 7.00% earnings and 2.00% dividend projections, I

2   believe that a 4.60% rate of growth would appear to be more realistic.

3

4   Q.   Please continue with the external growth rate component portion of your

5   analysis.

6   A.   Schedule WAR-6 demonstrates that despite the drop in AWR's

7   sustainable internal growth rate in 2002, the pattern of share's outstanding

8   increased from 13.44 million to 15.18 from 1998 to 2002. Value Line is

9   predicting that this level will increase to 16.80 million in 2003 and remain

10   constant through 2008. Still, some share growth is possible so I believe

11   that a 0.10% growth in shares is not unreasonable for AWR. My final

12   dividend growth rate estimate for AWR is 4.70 percent (4.60 percent

13   internal + 0.10 percent external) and is shown on Page 1 of Schedule

14   WAR-5.

15

16   Q.   What is your average dividend growth rate estimate using the DCF model

17   for the sample water utilities?

18   A.   Based on the DCF model; my average dividend growth rate estimate is

19   5.90 percent as displayed on Page 1 of Schedule WAR-5.

20

21

22

1 Q. How does your average dividend growth rate compare to the growth rate

2   data of other publicly traded firms?

3 A. Overall my estimate is in line with the projections of analysts at Zacks

4   Investment Research, Inc. ("Zacks") and somewhat optimistic when

5   compared with the projections of analysts at Value Line. Schedule WAR-7

6   compares my sustainable growth estimates with the five-year projections

7   of both Zacks and Value Line. The 5.90 percent estimate that I have

8   calculated matches the projected EPS average of 5.90 percent for Zacks

9   and 5.78 percent for Value Line (which is an average of EPS, DPS and

10   BVPS). My 5.90 percent estimate is 251 basis points higher than the five-

11   year compound historical average also displayed in Schedule WAR-7.

12   This indicates that investors are expecting increased performance from

13   water utilities in the future. On balance, I would say my 5.90 percent

14   estimate is a good representation of the growth projections that are

15   available to the investing public.

16

17 Q. How did you calculate the dividend yields displayed in Schedule WAR-4?

18 A. I used the estimated annual dividends, for the next twelve-month period,

19   that appeared in the May 2, 2003 Ratings and Reports water utility update

20   of The Value Line Investment Survey. I then divided that figure by the

21   eight-week average price per share of the appropriate utility's common

1   stock. The eight-week average price is based on the daily closing stock

2   prices for each utility for the period April 21, 2003 to June 13, 2003.

3

4 Q. Based on the results of your DCF analysis, what is your cost of equity

5   capital estimate for the water utilities included in your sample?

6 A. As shown in Schedule WAR-3, the cost of equity capital derived from my

7   analysis is 9.18 percent.

8

9 **Capital Asset Pricing Model (CAPM) Method**

10 Q. Please explain the theory behind the capital asset pricing model ("CAPM")

11   and why you decided to use it as an equity capital valuation method in this

12   proceeding.

13 A. CAPM is a mathematical tool that was developed during the early 1960's

14   by William F. Sharpe.[8] The CAPM model is used to analyze the

15   relationships between rates of return on various assets and risk as

16   measured by beta.[9]   In this regard, CAPM can help an investor to

17   determine how much risk is associated with a given investment so that he

18   or she can decide if that investment meets their individual preferences.

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[8] William F. Sharpe, "A Simplified Model of Portfolio Analysis," Management Science, Vol. 9, No. 2 (January 1963), pp. 277-93.

[9] Beta is defined as an index of volatility, or risk, in the return of an asset relative to the return of a market portfolio of assets. It is a measure of systematic or non-diversifiable risk. The returns on a stock with a beta of 1.0 will mirror the returns of the overall stock market. The returns on stocks with betas greater than 1.0 are more volatile or riskier than those of the overall stock market; and if a stock's beta is less than 1.0, its returns are less volatile or riskier than the overall stock market.

22

1   Finance theory has always held that as the risk associated with a given

2   investment increases, so should the expected rate of return on that

3   investment and vice versa. According to CAPM theory, risk can be

4   classified into two specific forms: nonsystematic or diversifiable risk, and

5   systematic or non-diversifiable risk. While nonsystematic risk can be

6   virtually eliminated through diversification (i.e. by including stocks of

7   various companies in various industries in a portfolio of securities),

8   systematic risk, on the other hand, cannot be eliminated by diversification.

9   Thus, systematic risk is the only risk of importance to investors. Simply

10   stated, the underlying theory behind CAPM states that the expected return

11   on a given investment is the sum of a risk-free rate of return plus a market

12   risk premium that is proportional to the systematic (non-diversifiable risk)

13   associated with that investment. In mathematical terms, the formula is as

14   follows:

15

16
$$k = r_f + [\beta (r_m - r_f)]$$

17   where: k =   cost of capital of a given security,

18   r_f =   risk-free rate of return,

19   β =   beta coefficient, a statistical measurement of a

20   security's systematic risk,

21   r_m =   average market return (e.g. S&P 500), and

22              $r_m - r_f$ =   market risk premium.

1   Q.   What security did you use for a risk-free rate of return in your CAPM?

2   A.   I used an average of a 91-day Treasury Bill ("T-Bill") rate[10] and the 91-day

3   T-Bill futures rate that appeared in the June 20, 2003 issue of <u>The Wall</u>

4   <u>Street Journal</u> ("WSJ"). This resulted in a risk-free (r_f) rate of return of

5   0.91 percent.

6

7   Q.   Why did you use the short-term T-Bill rate as opposed to the yield on an

8   intermediate 5-year Treasury note or a long-term 30-year Treasury bond?

9   A.   Because a 91-day T-Bill presents the lowest possible total risk to an

10   investor. As citizens and investors, we would like to believe that U.S.

11   Treasury securities (which are backed by the full faith and credit of the

12   United States Government) pose no threat of default no matter what their

13   maturity dates are. However, a comparison of various Treasury

14   instruments will reveal that those with longer maturity dates do have

15   slightly higher yields. Treasury yields are comprised of two separate

16   components,[11] a true rate of interest (believed to be approximately 2.00

17   percent) and an inflationary expectation. When the true rate of interest is

18   subtracted from the total treasury yield, all that remains is the inflationary

19   expectation. Because increased inflation represents a potential capital

---

[10] A six-week average was computed for the current rate using 91-day T-Bill quotes listed in Value Line's Selection and Opinion newsletter from May 16, 2003 to June 20, 2003.

[11] As a general rule of thumb, there are three components that make up a given interest rate or rate of return on a security: the true rate of interest, an inflationary expectation, and a risk premium. The approximate risk premium of a given security can be determined by simply subtracting a 91-day T-Bill rate from the yield on the security.

1   loss, or risk, to investors, a higher inflationary expectation by itself

2   represents a degree of risk to an investor. Another way of looking at this

3   is from an opportunity cost standpoint. When an investor locks up funds in

4   long-term T-Bonds, compensation must be provided for future investment

5   opportunities foregone. This is often described as maturity or interest rate

6   risk and it can affect an investor adversely if market rates increase before

7   the instrument matures (a rise in interest rates would decrease the value

8   of the debt instrument). As discussed earlier in the DCF portion of my

9   testimony, this compensation translates into higher rates of returns to the

10   investor. Since a 91-day T-Bill presents the lowest possible total risk to an

11   investor, it more closely meets the definition of a risk-free rate of return

12   and is the more appropriate instrument to use in a CAPM analysis.

13

14   Q.   How did you calculate the market risk premium used in your CAPM

15   analysis?

16   A.   I used both a geometric and an arithmetic mean of the historical returns on

17   the S&P 500 index from 1926 to 2002 as the proxy for the market rate of

18   return (r_m). The risk premium (r_m - r_f) that results by using the geometric

19   mean calculation for r_m is equal to 9.29 percent (10.20 percent – 0.91

20   percent). The risk premium that results by using the arithmetic mean

21   calculation for r_m is 11.29 percent (12.20 percent – 0.91 percent).

22

1   Q.   How did you select the beta coefficients that were used in your CAPM

2   analysis?

3   A.   The beta coefficients (β), for the individual utilities used in my sample,

4   were calculated by Value Line and were current as of May 2, 2003. Value

5   Line calculates its betas by using a regression analysis between weekly

6   percentage changes in the market price of the security being analyzed

7   and weekly percentage changes in the NYSE Composite Index over a

8   five-year period. The betas are then adjusted by Value Line for their long-

9   term tendency to converge toward 1.00. The beta coefficients for the

10   water utilities included in my sample ranged from 0.60 to 0.70 with an

11   average beta of 0.63.

12

13   Q.   What are the results of your CAPM analysis?

14   A.   As shown on Pages 1 and 2 of Schedule WAR-8, my CAPM calculation

15   using a geometric mean for r_m results in an average expected return of

16   6.79 percent. My calculation using the arithmetic mean results in an

17   average expected return of 8.06 percent. The consensus among financial

18   analysts is that the arithmetic mean is the better of the two averages. For

19   this reason, I believe that the 8.06 percent figure is the better check on the

20   results of my DCF analysis.

21

1 Q.   Please summarize the results derived under each of the methodologies

2   presented in your testimony.

3 A.   The following is a summary of the cost of equity capital derived under

4   each methodology used:

5

6   METHOD   RESULTS

7   DCF   9.18%

8   CAPM   6.79% – 8.06%

9

10   Based on these results, my best estimate of an appropriate range for the

11   cost of equity is 6.79 percent to 9.18 percent. My final recommendation is

12   a 9.18 percent return for Arizona Water's cost of equity capital.

13

14 **Current Economic Environment**

15 Q.   Please explain why it is necessary to consider the current economic

16   environment when performing a cost of equity capital analysis for a

17   regulated utility.

18 A.   Consideration of the economic environment is necessary because trends

19   in interest rates, present and projected levels of inflation, and the overall

20   state of the U.S. economy determine the rates of return that investors earn

21   on their invested funds. Each of these factors represent potential risks

22   that must be weighed when estimating the cost of equity capital for a

1   regulated utility and are, most often, the same factors considered by

2   individuals who are investing in non-regulated entities also.

3

4   Q.   Please discuss your analysis of the current economic environment.

5   A.   My analysis includes a review of the economic events that have occurred

6   since 1990. Schedule WAR-9 displays various economic indicators and

7   other data that I will refer to during this portion of my testimony.

8   In 1991, as measured by the annual change in gross domestic product

9   ("GDP"), the U.S. Economy experienced a rate of growth of only 0.85

10   percent. This decline in GDP marked the beginning of a mild recession

11   that ended sometime before the end of the first half of 1992. Reacting to

12   this situation, the Federal Reserve Board ("Federal Reserve" or "Fed"),

13   chaired by noted economist Alan Greenspan, lowered its benchmark

14   federal funds rate[12] in an effort to further loosen monetary constraints - an

15   action that resulted in lower interest rates.

16   During this same period, the nation's major money center banks followed

17   the Federal Reserve's lead and began lowering their interest rates as well.

18   By the end of the fourth quarter of 1993, the prime rate (the rate charged

19   by banks to their best customers) had dropped to 6.00 percent from a

20   1990 level of 10.01 percent. In addition, the Federal Reserve's discount

---

[12] The interest rate charged by banks with excess reserves at a Federal Reserve district bank to banks needing overnight loans to meet reserve requirements. The federal funds rate is the most sensitive indicator of the direction of interest rates, since it is set daily by the market, unlike the prime rate and the discount rate, which are periodically changed by banks and by the Federal Reserve Board, respectively.

1   rate on loans to its member banks had fallen to 3.00 percent and short-

2   term interest rates had declined to levels that had not been seen since

3   1972.

4

5   Although GDP increased in 1992 and 1993, the Federal Reserve took

6   steps to increase interest rates beginning in February of 1994, in order to

7   keep inflation under control. By the end of 1995, the Federal discount rate

8   had risen to 5.21 percent. Once again, the banking community followed

9   the Federal Reserve's moves. The Fed's strategy, during this period, was

10   to engineer a "soft landing." That is to say that the Federal Reserve

11   wanted to foster a situation in which economic growth would be stabilized

12   without incurring either a prolonged recession or runaway inflation.

13

14   Q.   Did the Federal Reserve achieve its goals during this period?

15   A.   The Fed's strategy of decreasing interest rates to stimulate the economy

16   worked. The annual change in GDP began an upward trend in 1991. A

17   change of 3.9 percent was recorded at the end of both 1997 and 1998.

18   Based on daily reports that were presented in the mainstream print and

19   broadcast media during most of 1999, there appeared to be little doubt

20   among both economists and the public at large that the U.S. was

21   experiencing a period of robust economic growth highlighted by low rates

22   of unemployment and inflation. Investors who believed that technology

29

1   stocks and Internet company start-ups (with little or no history of earnings)

2   had high growth potential, purchased these types of issues with

3   enthusiasm. These types of investors, who exhibited what Chairman

4   Greenspan described as "irrational exuberance," pushed stock prices and

5   market indexes to all time highs from 1997 to 2000.

6

7   Q.   What has been the state of the economy over the last two years?

8   A.   The U.S. economy plunged into recession following the tragic events of

9   September 11, 2001. The bullish trend, which had characterized the last

10   half of the 1990's, had already run its course sometime during the third

11   quarter of 2000. Economic data released since the beginning of 2001

12   had already been disappointing during the months preceding the terrorist

13   attacks on the World Trade Center and the Pentagon. Slower growth

14   figures, rising layoffs in the high technology manufacturing sector, and

15   falling equity prices (due to lower earnings expectations) prompted the

16   Fed to begin cutting interest rates as it had done in the early 1990's. The

17   now infamous terrorist attacks on New York and Washington D.C.

18   triggered an economic slump that prompted the Federal Reserve to

19   continue its rate cutting actions through December 2001.

20

21

22

1   Q.   What actions has the Federal Reserve taken in terms of interest rates

2   since the beginning of 2001?

3   A.   To date, the Federal Reserve has cut interest rates thirteen times since

4   the beginning of 2001. Despite some signs of economic strength, that

5   were mainly attributed to consumer spending, Chairman Greenspan

6   appeared to be concerned with sharp declines in capital spending in the

7   business sector. Prior to the 9/11 attacks, Commentators reporting in both

8   the mainstream financial press and various economic publications,

9   including Value Line, believed that the Fed Chairman was cutting rates in

10   the hope of avoiding the recession that the U.S. is presently experiencing.

11

12   Despite several intervals in which the Federal Open Market Committee

13   ("FOMC") decided not to cut interest rates, moves that indicated that the

14   worst may be over and that the current recession might have bottomed out

15   in the last quarter of 2001, a lackluster economy has persisted. This

16   continuing economic malaise prompted the FOMC to make its thirteenth

17   rate cut on June 24, 2003. The quarter point cut reduced the federal

18   funds rate to 1.00 percent, the lowest level in 45 years.

19

20   Q.   How has the Fed's actions affected benchmark rates?

21   A.   Virtually all of the benchmark rates have fallen to levels not seen in over

22   forty years. The Fed's actions have had the effect of reducing the cost of

1   many types of business and consumer loans. In addition to slashing the

2   federal funds rate, the Fed has also cut the federal discount rate (the rate

3   charged to member banks) from 5.73 percent in 2000, to its present level

4   of only 2.00 percent. The federal discount rate has declined by three

5   hundred and fifty basis points since January 2001 when it stood at 5.50

6   percent.

7

8   Q.   What has been the trend in other leading interest rates over the last year?

9   A.   As of the first week of July 2003, all of the leading interest rates have

10   declined. The prime rate has fallen from 4.75 percent a year ago to a

11   current level of 4.00 percent. The benchmark federal funds rate, just

12   discussed, has dropped from 1.75 percent, in June 2002, to its current

13   level of 1.00 percent. The yields on all maturities of U.S. Treasury

14   instruments have declined over the past year. The 91-day T-bill rate, used

15   in my CAPM analysis, has declined from 1.69 percent, in June 2002, to

16   0.88 percent, as has the One-Year Treasury Constant Maturity rate, which

17   has dropped from 1.98 percent to 0.86 percent.

18

19   Q.   How much more room does the Fed have for cutting interest rates?

20   A.   In the months before the Fed's most recent rate cut move, Chairman

21   Greenspan made it clear that the Fed had other tools at its disposal to

22   boost the economy other than cutting its key interest rate, this includes

1   purchasing long-term U.S. Treasury Instruments. As has been reported in

2   the mainstream financial press, Chairman Greenspan is now more

3   concerned with deflation as opposed to inflation. A situation where falling

4   prices in goods and service can force employers to layoff employees as

5   part of their cost cutting measures to remain competitive in the

6   marketplace (a situation that existed during the great depression of the

7   1930's).

8

9   Q.   How have analysts viewed the Fed's recent rate cutting actions and the

10   economy in general?

11   A.   Economists at the major money center banks serving Arizona have

12   remained upbeat about the economy and the Fed's actions since January

13   of 2002. In his "Economic Brief" dated June 30, 2003, Bank of America

14   Chief Economist Mickey Levy forecasted for 3.00 percent to 3.25 percent

15   in annualized growth for the last half of 2003. In its "Selection & Opinion"

16   update dated July 4, 2003, Value Line stated their analysts believed that

17   the Fed's last interest rate cut will "energize the economy. " Value Line's

18   analysts have consistently reiterated their belief that the Fed's recent

19   actions on the interest rate front will result in a period of moderate

20   economic growth and low inflation. Value Line's analysts do not appear to

21   share Chairman Greenspan's fears regarding deflation. Sung Won Sohn,

1   the chief economist for Wells Fargo Bank, has even stated that mild

2   deflation may even be good for the equity markets.

3

4   Q.   How would utilities such as Arizona water fare in a deflationary

5   environment?

6   A.   Regulated public utilities would more than likely fare well in such an

7   environment. This is because utility rates would be immune to the same

8   economic pressures forcing the prices of competitive goods and services

9   down. Utility stocks would probably be extremely attractive to investors

10   since lower prices on the goods and services purchased by utilities would

11   result in higher earnings expectations and stable, possibly even increased,

12   dividend payouts.

13

14   Q.   Please summarize how the economic data just presented relates to

15   Arizona Water.

16   A.   Summarizing this information, as it relates to Arizona Water, the current

17   low (or for that matter nonexistent) rate of inflation translates into stable

18   and even possibly declining prices for goods and services, which in turn

19   means that Arizona Water can expect its present operating expenses to

20   either remain stable or possibly decline in the coming years. Lower

21   interest rates would also benefit Arizona Water in regard to the Company's

22   short and long-term borrowing needs. Lower interest rates, would further

1   help to accelerate growth in new construction projects and home

2   developments in the Company's service territories, and may result in new

3   revenue streams to Arizona Water.

4

5   Q.   After weighing the economic information that you've just discussed, do you

6   believe that your 6.79 percent to 9.18 percent estimated cost of equity

7   capital is reasonable for Arizona Water?

8   A.   I believe that my estimate of equity costs will provide Arizona Water with a

9   reasonable rate of return on the Company's invested capital when the data

10   on lower interest rates, continued growth in construction, and the low and

11   stable outlook for inflation are all taken into consideration. As I noted

12   earlier, the Hope decision determined that a utility is entitled to earn a rate

13   of return that is commensurate with the returns it would make on other

14   investments with comparable risk. I believe that my DCF analysis has

15   produced such a return. The results that I have obtained are consistent

16   with Value Line's view that water utility stocks are likely to appeal to

17   conservative investors who seek steady earnings growth and good

18   dividend yield. In Value Line's opinion, water utilities, such as Arizona

19   Water, which face little to no competition in their geographic service areas,

20   are the nation's last pure monopolies (hence low risk resulting in lower

21   returns on investment).

22

1 **COST OF DEBT**

2 Q.   Have you accepted the Company's 8.44 percent cost of long-term debt?

3 A.   Yes. The Company has not issued any additional long-term debt since its

4   Northern Group rate case in 2001. During that proceeding I accepted the

5   Company's methodology for calculating its cost of debt on the bond

6   issuances that were outstanding at the end of December 31, 2002, the

7   post-test year period that RUCO has adopted in this proceeding (Schedule

8   WAR-2).

9

10 Q.   Have you accepted the Company's 7.37 percent cost of short-term debt?

11 A.   No. Based on information obtained through data requests from the

12   Company, I have placed the Company's short-term cost of debt at 4.00

13   percent.

14

15 Q.   How did you arrive at your recommended 4.00 percent cost of short-term

16   debt?

17 A.   My recommended cost of 4.00 percent is based on the fact that the

18   Company's only short-term debt balance, as of December 31, 2002,

19   consisted of borrowings from a line of credit from Bank of America.

20   Decision No. 64996, dated June 26, 2002 ordered that the interest rate on

21   this line of credit was not to exceed Bank of America's reference rate

1   minus 25 basis points. According to the Company, Bank of America's

2   reference rate was 4.25 percent as of November 2002.

3

4 **CAPITAL STRUCTURE**

5 Q.   Have you reviewed Arizona Water's testimony regarding the Company's

6   proposed capital structure?

7 A.   Yes, I have.

8

9 Q.   Please describe the Company's proposed capital structure.

10 A.   The Company-proposed (actual and adjusted) Test Year capital structure,

11   which allocates total Company debt and equity on a percentage basis for

12   the Eastern Group in Schedule D-1 of Arizona Water's Application, is

13   comprised of 3.79 percent in short-term debt, 30.55 percent long-term

14   debt and 65.87 percent in common equity. The Company's projected

15   2002 capital structure is comprised of 9.05 percent short-term debt, 27.65

16   percent long-term debt and 63.30 percent in common equity.

17

18 Q.   What capital structure are you proposing for Arizona Water?

19 A.   My proposed capital structure, displayed in Schedule WAR-1, is

20   comprised of 5.62 percent in short-term debt, 28.24 percent in long-term

21   debt and 66.13 percent in common equity. In keeping with RUCO's

22   recommendation to match all of the Company's ratemaking elements to

1   the period ended December 31, 2002, I have used the balances of debt

2   and equity that were recorded on the Company's books at the end of

3   2002.

4

5   Q.   How does your recommended cost of equity capital compare with the cost

6   of equity capital proposed by the Company?

7   A.   The 12.40 percent cost of equity capital, based on the actual and adjusted

8   Test Year capital structure, proposed by the Company is 322 basis points

9   higher than the 9.18 percent cost of equity capital that I am

10   recommending. This is also true for the Company's projected 2002 capital

11   structure.

12

13 Q.   How does the Company's proposed weighted cost of capital compare with

14   your recommendation?

15 A.   The Company has proposed a weighted cost of capital of 11.00 percent.

16   This composite figure is the result of a weighted average of Arizona

17   Water's proposed 7.37 percent cost of short-term debt, 8.46 percent cost

18   of long-term debt and a 12.40 percent cost of equity capital. The

19   Company-proposed 11.00 percent weighted cost of capital is 232 basis

20   points higher than the 8.68 percent weighted cost that I am

21   recommending. The Company's weighted cost of capital of 10.85 percent

1 for the projected 2002 period is 217 basis points higher than my

2 recommended 8.68 percent weighted cost of capital.

3

4 Q. Is Arizona Water's capital structure in line with industry averages?

5 A. No. Arizona Water's capital structure is heavier in equity than the capital

6 structures of the other water companies included in my cost of capital

7 analysis (Schedule WAR-10). The capital structures for those utilities

8 averaged 59.9 percent for debt (7.8 percent short-term debt + 52.1

9 percent long-term debt) and 40.1 percent for equity (0.2 percent preferred

10 equity + 39.9 percent common equity).

11

12 Q. In terms of risk, how does Arizona Water's capital structure compare to

13 the water utilities in your sample?

14 A. The water utilities in my sample would be considered as having a higher

15 level of financial risk (i.e. the risk associated with debt repayment)

16 because of their higher levels of debt. The additional financial risk due to

17 debt leverage is embedded in the cost of equities derived for those

18 companies through the DCF analysis. Thus, the cost of equity derived in

19 my DCF analysis is applicable to companies that are more leveraged and,

20 theoretically speaking, riskier than a utility with a level of debt similar to

21 Arizona Water's. In the case of a publicly traded company, such as those

22 included in my proxy, a company with Arizona Water's level of debt would

1 be perceived as having a lower level of financial risk and would therefore

2 also have a lower expected return on common equity.

3

4 Q. Have you made a downward adjustment to your DCF estimate based on

5 this perception of lower financial risk?

6 A. No. I have not made an adjustment to my recommended cost of equity. I

7 recognize that Arizona Water may have some degree of risk that would

8 not be present in the sample companies. However, I believe that such risk

9 is minimal at best. Well-managed regulated water utilities are similar in

10 nature regardless of their size; however, a smaller utility may experience a

11 slightly higher level of liquidity risk due to size. Arizona Water's potential

12 for a small degree of liquidity risk is more than offset by its lower level of

13 financial risk.

14

15 **COMMENTS ON ARIZONA WATER'S COST OF EQUITY CAPITAL**

16 **TESTIMONY**

17 Q. Are there portions of the cost of equity capital testimony presented by the

18 Company that you would like to comment on?

19 A. Yes. I would like to discuss the methodologies used to calculate the

20 Company's proposed cost of equity capital and the factors on which the

21 Company is relying on in support of a risk premium.

22

1 **Comparison of Methods**

2 Q. What methodology did Arizona Water use to determine its proposed cost

3 of equity capital?

4 A. The Company's consultant, Dr. Thomas M. Zepp, used two methods for

5 determining a cost of equity capital: the DCF and a risk premium method,

6 which I did not use in my cost of common equity analysis.

7

8 Q. Please compare Dr. Zepp's DCF results and the results of your DCF

9 analysis.

10 A. Dr. Zepp's DCF analysis derived an estimated cost of equity capital for

11 sample water and gas utilities that ranged from 11.00 percent to 11.20

12 percent, which is 182 to 202 basis points higher than the 9.18 percent

13 result derived from my DCF analysis. Dr. Zepp's estimated equity costs

14 for Arizona Water ranged from 12.00 percent to 12.70 percent or 282 to

15 352 basis points higher than my 9.18 percent recommended cost for

16 equity capital. Dr. Zepp's final recommended cost of common equity for

17 Arizona water of 12.40 percent is based on his belief that a 100 to 150

18 basis point risk adjustment is warranted for Arizona Water because of the

19 risks that the Company faces.

20

21

1   Q.   What factors does Dr. Zepp cite in order to justify an additional return over

2   the results of his cost of equity capital analysis?

3   A.   Dr. Zepp cites the following factors:

4

5   a)   company size,

6   b)   inability to place bonds at reasonable rates,

7   c)   not being publicly traded,

8   d)   historical test year concept practiced in Arizona; and

9   e)   new Environmental Protection Agency ("EPA")

10   standards for arsenic.

11

12   Dr. Zepp proposes that these factors merit a 100 to 150 basis point

13   increase, or a 1.00 percent to 1.50 percent risk premium, above the rates

14   of return derived from the lower range of his DCF and risk premium

15   results.

16

17   Q.   Do you agree with Dr. Zepp's position that a 100 to 150 basis point "risk

18   premium" should be added to Arizona Water's cost of equity capital based

19   on the issues listed in the Company's Application?

20   A.   No I do not. I will address each of these issues in the remainder of my

21   direct testimony.

22

23

Company Size

1

2 Q.   What sources does Dr. Zepp cite as a justification for a risk premium

3   based on company size?

4 A: Dr. Zepp cites several sources that advocate a risk premium because of

5   firm size. The first source is a 1997 article[13] published by Eugene Fama

6   and Kenneth R. French that, according to Dr. Zepp, presents evidence

7   that smaller companies, with betas that are identical to larger companies,

8   are generally riskier. The second source, which is closely related to the

9   findings presented in the Fama-French article just noted, is Chapter 7 of

10   Ibbotson Associates' annual publication Stocks Bonds, Bills and Inflation,

11   2000 Yearbook ("SBBI Yearbook"), which advocates that a risk premium is

12   warranted on smaller sized firms because their actual returns exceed the

13   expected returns that are derived from the results of a CAPM analysis.

14   The third source is a decision on a California water utility (Park Water

15   Company) that was influenced by a 1990 California Public Utilities

16   Commission ("CPUC") Order Instituting Investigation (OII). In regard to

17   this last source, the Company cites a CPUC study that has been quoted in

18   other Arizona proceedings as a justification for a risk premium[14].

19

20

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[13] Fama, E.F. and French, K.R., "Industry Costs of Equity," The Journal of Financial Economics, No. 43 (1997), pp. 153-193.

[14] Bermuda Water Company, Docket No. W-01812A-98-0390, Exhibit A-12 presented during hearing.

1   Q.   Have you reviewed these studies?

2   A.   Yes, I have.

3

4   Q.   Does the Fama-French article cited by the Company support a risk

5   premium?

6   A.   The "Industry Costs of Equity" article by Fama and French presents

7   research in support of their position that the CAPM (developed by Sharpe,

8   Lintner and Black) and a three-factor equity-pricing model (created by

9   Fama and French) provide imprecise estimates of cost of equity. I believe

10   that this article is a continuation of research originally presented 1992, and

11   does not contain any new revelations in regard to an ongoing debate in

12   the academic community over the returns of publicly traded small

13   capitalization firms. Both the 1992 and 1997 Fama French articles do,

14   however, refer to a third journal article titled "Structural and Return

15   Characteristics of Small and Large Firms," which was published by K.C.

16   Chan and Nai-Fu Chen ("Chan & Chen") in the September 1991 issue of

17   The Journal of Finance. This article presents evidence that small size by

18   itself does not necessarily imply higher risk and that differences in market

19   capitalization fail to explain why small and large firms have different

20   responses to economic news.

21

22

1 Q. What were the findings presented in the Chan & Chen article?

2 A. Chan & Chen concluded that certain smaller publicly traded firms on the

3   NYSE, are firms that can be best described as economically distressed.

4   That is to say that these firms were once large capitalization companies

5   that *declined* in size because of poor management (i.e. being run

6   inefficiently) a situation that contributed to their higher financial leverage

7   (i.e. higher levels of debt). These types of companies, or "marginal firms"

8   as Chan & Chen refer to them, also suffer from cash flow problems that

9   are a result of their higher levels of debt. Because these "marginal firms"

10   are experiencing declining cash flows, they are often forced to cut their

11   dividends. This in turn causes their stock prices to fall because investors

12   are not realizing their expected rate of return. Chan & Chen's findings

13   also addressed a seasonal phenomenon, known as the January effect,

14   which is exhibited in the monthly return data on the publicly traded stocks

15   of marginal firms.

16

17 Q. Would Arizona Water fit the description of a marginal firm in terms of the

18   Company's level of debt?

19 A. I do not believe so. As I explained in my testimony on the Company's

20   capital structure, Arizona Water's post-test year 2002 debt level of 33.86

21   percent was 26.04 percent lower than the average debt level of all the

22   water utilities tracked by Value Line.

1 Q.   Has Arizona Water had a history of cash flow problems?

2 A.   Not according to data compiled from the Company's Annual Reports to the

3   ACC's Utilities Division. Between 1992 and 2002, Arizona Water reported

4   positive after-tax net income ranging from $2.6 million in 1992 to $6.2

5   million in 2002.   The Company also paid out regular dividends to

6   shareholders in each of these years. In terms of Arizona Water's ability to

7   meet the Company's debt obligations, Decision No. 64996, dated June 26,

8   2002, which approved the Company's current line of credit with Bank of

9   America, stated that Commission Staff had calculated a pro forma times

10   interest earned ratio[15] ("TIER") of 3.86 and a debt service coverage ratio[16]

11   ("DSC") of 3.69. Generally speaking, a TIER of at least 1.50 and a DSC of

12   1.25 are considered to be adequate.   The results of Staff's financial

13   analysis in the aforementioned proceeding indicate that Arizona Water

14   had more than adequate cash flows needed to meet the Company's

15   annual debt service obligations.

16

17 Q.   Did Arizona Water cut the Company's dividend per share that was paid

18   out at any time during the period from 1992 to 2002?

19 A.   Only during the Test Year. In 2000 the Company paid out an $11.45 per

20   share dividend (53.26 percent of net income) the largest dividend paid

---

[15] A ratio that measures the number of times that a company's earnings will cover its contractual interest obligations.

[16] The number of times that a company's cash flow will cover its principal and interest payments.

46

1 prior to that year. During the Test Year, the Company paid out $5.58 per

2 share (34.34 percent in net income), the first cut in dividends since 1989.

3 However, in 2002 the Company paid out a dividend of $11.81 per share,

4 the largest dividend paid since 1989 (51.61 percent of net income). Prior

5 to the 2000 operating period, Arizona Water's dividends increased an

6 average 6.9 percent between 1989 and 1999. This average included a

7 9.4 percent increase during 1999 due to a special dividend which was paid

8 out in addition to the Company's regular annual dividend.[17] The

9 Company's dividend payout averaged 47.8 percent of net income over this

10 same period of time.[18]

11

12 Q. Is there any other evidence that would support your view that Arizona

13   Water does not fit the description of a marginal firm?

14 A. Yes, the Commission-approved $11.5 million line of credit with Bank of

15   America discussed earlier. In my opinion, the fact that Bank of America is

16   extending credit to the Company reinforces my position that Arizona Water

17   is a creditworthy entity and certainly not one that is viewed by financial

18   institutions as a lending risk or, for that matter, a marginal firm.

19

---

[17] During 1999, Arizona Water paid a regular dividend of $9.87 and a special dividend of $7.41.

[18] Based on 270,000 shares of common stock.

1   Q.   Please describe the information presented in Chapter 7 of the SBBI

2   publication.

3   A.   As noted earlier Chapter 7 of the SBBI Yearbook advocates risk premiums

4   for firms with certain size characteristics because the actual returns of

5   these types of firms exceed the expected returns that are derived from the

6   results of a CAPM analysis. The chapter presents the results of NYSE

7   Common stock return data, observed from 1926 to the present, on various

8   sized firms in ten different size groups or "deciles."

9

10 Q.   Given the information that is presented in the SBBI Yearbook, why are you

11   convinced that a risk premium is not warranted?

12 A.   My principal rejection of the information contained in Chapter 7 of the

13   SBBI Yearbook is because it is not utility specific. A compelling argument

14   as to why the size effect does not apply to regulated utilities can be found

15   in the attached study by Annie Wong titled <u>Utility Stocks and the Size</u>

16   <u>Effect: An Empirical Analysis</u> (Attachment 1).

17

18 Q.   Do you have any additional comments on Chapter 7 of the SBBI

19   Yearbook?

20 A.   Yes. I think that it is interesting to note that there is a passage in the

21   chapter that briefly discusses a seasonal phenomenon that is known as

22   the "January effect" (which I noted earlier in my discussion on the Chan

1   and Chen article published in 1991). In my opinion, this passage is

2   something of a disclaimer for the small capitalization stock results that are

3   presented in the chapter.

4

5   Q.   What exactly is the January effect?

6   A.   The January effect refers to a situation that has existed for at least the last

7   thirty-six years and may have occurred in forty of the last forty-seven

8   years, whereby small company stocks outperform large company stocks

9   from the end of December through January. Research conducted in 1981

10   by Donald B. Keim[19] and later by Robert A. Haugen,[20] revealed that

11   virtually all of the effect occurred in the month of January and that a large

12   part of the effect occurred within the first five days of January. In other

13   words there is virtually no significant difference in the prices (which would

14   affect the rates of return on the stocks that are used to calculate beta) of

15   small company stocks and large company stocks during the remaining

16   eleven months of the year. Given this information, I believe that there

17   appears to be no really sound rationale for a small company premium.

18

---

[19] Keim, D.B. "Size-Related Anomalies and Stock Return Seasonality: Further Empirical Evidence," Journal of Financial Economics, Vol. 12, no. 1 (June. 1983): 13-32.

[20] Haugen, Robert A. and Philippe Jorion "The January Effect: Still There After All These Years," Financial Analysts Journal. (Jan. Feb. 1996): 27-31.

1 Q. What exactly causes this difference in performance between small

2   company and large company stocks primarily in January?

3 A. The conventional wisdom on the subject is that the difference results from

4   both portfolio balancing and tax-loss selling by large institutional investors

5   (i.e. mutual and pension funds) at the end of December. Since this sell off

6   (which results in a drop in small company stock prices) occurs at the end

7   of the year, these same small company stocks tend to rebound during the

8   early days of January. This is due to increased demand for small

9   company stocks from optimistic investors. As a result of this increased

10   demand, the prices of small company stocks are driven up higher than the

11   prices for large company stocks.

12

13   Because the sell off may be tax motivated, it has even been suggested

14   that the policies of the federal government would essentially perpetuate

15   the January effect on an annual basis. However, it is interesting to note

16   that the January effect has not materialized since 1995 (although some

17   analysts believe that the timing of the effect has shifted to October and

18   November). According to an article, dated February 3, 1997, which

19   appeared on the CNN Financial Network Internet web site, the absence of

20   the January effect in recent years may have occurred due to a shift in

21   buying habits among younger investors who prefer large company stocks.

22   If this is actually the case, the lack of demand kept the prices of small

1   company stocks down and also in line with the prices of large company

2   stocks. This would only strengthen the argument that no real difference

3   exists between the prices of small company stocks and large company

4   stocks and further weakens the argument for a small company premium.

5

6   Q.   Have you reviewed the background on the Park Water Company case that

7   the Dr. Zepp cited his direct testimony in support of his proposed risk

8   premium?

9   A.   Yes. The Park Water Company decision has its basis in two CPUC

10   decisions. Decision 92-03-093, dealt with California Class B, C and D

11   water utilities and Decision 94-06-033 dealt with larger California Class A

12   water utilities.

13

14   Q.   Do these CPUC Decisions support a risk premium as requested by the

15   Company?

16   A.   No. I do not believe that the findings and conclusions contained in these

17   two decisions support the risk premium being proposed by the Company.

18

19   Q.   What is the background behind these two CPUC decisions?

20   A.   As noted previously, these decisions were the result of a 1990 CPUC OII.

21   Acting under this order, the CPUC Staff prepared a study ("CPUC Study")

1   that examined the risks faced by water providers operating in the state of

2   California.

3

4   Q.   Briefly summarize the conclusions of the CPUC Decision 92-03-093.

5   A.   Based on the conclusions and recommendations presented in the CPUC

6   Study, Decision 92-03-093 adopted a generic rate of return that ranged

7   from 11.6 percent to 12.1 percent for California Class C utilities and 13.9

8   percent to 14.4 percent on California Class D utilities.[21] The CPUC Study,

9   which was conducted in 1991(at a time when interest rates were much

10   higher than now), concluded that the use of a rate of return on rate base

11   methodology is not the best method for compensating specific classes of

12   water utilities that are considered to be "risky," or perhaps more

13   appropriately, that have been deemed to be "at risk." These are water

14   providers that have relatively small rate bases and relatively high

15   operating expenses. In adopting its guidelines for setting rates for

16   companies that fall into these classes, the CPUC recognized "that Class C

17   and Class D water utilities are fundamentally different from Class A water

18   utilities in terms of the operational and financial risks [that] they face, [and]

19   it is not appropriate to tie the range of returns to those of Class A utilities."

20

21

---

[21] The Decision also stated that a rate of return could be set above or below these ranges if the facts of the case merited it.

1 Q.   How are water utilities classified in California?

2 A.   Unlike Arizona, which classifies utilities by the amount of operating

3   revenue that they generate, the CPUC classifies utilities by the number of

4   service connections that they have. These classifications are as follows:

5

6   Class A   greater than 10,000 connections

7   Class B   between 2,000 and 10,000 connections

8   Class C   between 500 and 2,000 connections

9   Class D   500 or fewer connections

10

11 Q.   Does Arizona Water, or the Company's Eastern Group as a whole fall into

12   the class C or D categories?

13 A.   No.

14

15 Q.   What class of utility would Arizona Water be under the CPUC system?

16 A.   Arizona Water by itself would be a Class A utility if it were regulated by the

17   CPUC. The Company's Eastern Group, with 29,236 combined service

18   connections, would also qualify as a Class A utility as would the Apache

19   Junction system with its 16,093 customers. Bisbee, Sierra Vista and

20   Miami, would qualify as Class B utilities. Superior, San Manuel and

21   Oracle would be a Class C utility under the CPUC standard. Winkelman

22   would be a Class D utility. So in terms of service connections, only the

1 Superior, San Manuel, Oracle and Winkelman systems which are all

2 benefiting from various economies of scale by being a part of the larger

3 Arizona Water family of systems, would fall into a class of utility targeted in

4 the CPUC Study cited by the Company.

5

6 Q. What did Decision 94-06-033, which dealt with large Class A water

7 utilities, conclude?

8 A. As stated in the Introduction of CPUC Decision 94-06-033 the CPUC

9 concluded that "no fundamental change in our ratemaking procedures are

10 necessary at this time based on the risks of endemic water shortage and

11 increased costs of water quality." However, the CPUC Staff does

12 distinguish somewhat between larger and smaller Class A utilities as

13 evidenced in a decision, cited by Dr. Zepp, on a California Class A water

14 utility, Park Water Company, which I will discuss later in my testimony.

15

Inability to Place Bonds at Reasonable Rates

16

17 Q. Please address Dr. Zepp's justification for a risk premium based on

18 Arizona Water Company's inability to place bonds at reasonable rates.

19 A. This is a moot point since Arizona Water successfully placed its Series K,

20 8.04 percent general mortgage bonds, due in 2031, during April 2001.

21 Although I will concede that it may have taken Arizona Water longer to

22 place this particular bond issue than others in the past (do to changing

1   market conditions for the size of the issues being offered), the fact

2   remains that the issue was indeed placed by the Company.

3

4   **Not Being Publicly Traded**

5   Q.   What is your response to Dr. Zepp's argument that Arizona Water is

6   entitled to a risk premium because it is a closely held firm whose stock is

7   not publicly traded?

8   A.   .I believe that Chan & Chen's assertion that smallness by itself does not

9   necessarily imply higher risk could also be applied to the fact that Arizona

10   Water is a closely held firm. Although Arizona Water may not have the

11   same access to the capital markets that a publicly traded firm does, being

12   closely held has not prevented the Company from raising needed capital.

13   This includes Arizona Water's ability to place bond issues (the Company's

14   preferred method of debt financing), obtain lines of credit with major

15   money center banks such as Bank of America, or manage internally

16   generated funds in order to allow the Company to meet its annual debt

17   service obligations and still pay steadily increasing dividends on a regular

18   basis.

19

20   Other than not having access to the capital markets to issue additional

21   shares of common stock, the Company has been able to do virtually

22   everything else that a publicly traded firm can do – without having to deal

1   with the additional problems and costs associated with being a publicly

2   traded firm. This would include such things as shareholder relations

3   problems, the additional costs associated with producing annual reports to

4   shareholders, the costs associated with additional required regulatory

5   filings (i.e. annual 10-K's and quarterly 10-Q's) with the U.S. Securities

6   and Exchange Commission ("SEC"), the costs associated with registering

7   new issues of stocks and bonds with the SEC, not to mention the legal

8   costs associated with lawsuits by shareholders.

9

10   Q.   Please respond to Dr. Zepp's Park Water Company[22] ("Park Water")

11   example of a California Class A water utility that received an additional

12   rate of return based on its size?

13   A.   According to the information contained on page 20 of Dr. Zepp's

14   testimony, the CPUC provided Park Water with an additional 30 basis

15   points for the following reasons:

16

17   a) small size,

18   b) limited financial flexibility,

19   c) demonstrated higher costs to borrow; and

20   d) vulnerability to catastrophic events.

---

[22] Based on information contained on its Internet web site, Park Water is an investor owned, public water utility, that currently delivers water to approximately 60,000 service connections. Park Water serves a population of about 200,000 people in Los Angeles and San Bernardino Counties in California, and in Missoula and Superior Counties in Montana.

1   With the exception of "vulnerability to catastrophic events," which I believe

2   refers to natural disasters, I have explained why I believe that none of the

3   aforementioned issues merit an increase for additional risk over my 9.18

4   percent cost of equity capital recommendation for Arizona Water.

5

6   Q.   Do you believe that Arizona Water is vulnerable to the type of catastrophic

7   events that Park Water is exposed to?

8   A.   A public utility operating in California would be subject to natural disasters

9   such as fire, earthquakes and mudslides. Of these types of disasters, I

10   believe that it is reasonable to assume that a major earthquake would

11   probably be the most catastrophic event faced by a water utility. Of the

12   three water utilities included in my proxy, two of them have large portions

13   of their operations located in the state of California. Of these three

14   utilities, the one that is probably the most vulnerable to earthquakes,

15   based on recent history is California Water (which operates in both

16   California and the state of Washington). Value Line is projecting returns

17   on common equity for California Water of 7.50 percent in 2003, 9.00

18   percent in 2004 and a 10.0 percent return during the 2006 – 2008 time

19   frame. Even if Arizona Water did experience losses from the types of

20   extraordinary incidents noted earlier, the Company would, as would any

21   other type of business in Arizona, recover losses through either insurance

1   coverage or possibly from some combination of state and/or federal

2   disaster relief funds.[23]

3

4 Q. You have discussed catastrophic events in the context of a natural

5   disaster, what about a situation that would be unique to a water utility,

6   such as having to shut down a key well or losing some other major source

7   of water supply?

8 A. This type of catastrophic event would fall more in line with the ACC's

9   power to set emergency rates. The Commission has the authority to set

10   temporary rates (that are subject to refund) on a case by case basis that

11   will provide rate relief that is needed as a result of some sudden change

12   that brings hardship on a utility. In recent years the Commission has

13   granted numerous requests for emergency rates, the best example of

14   which was the ACC's decision regarding emergency rates for Far West

15   Water & Sewer, Inc., in which interim rates were established in order to

16   help cover the costs associated with Commission mandated

17   improvements to utility plant.[24]

18

---

[23] Perhaps the best example of this is Bonita Creek Land and Homeowners Association, which was able to rebuild a water system that had been destroyed in a fire near Payson (the Dude Fire) through the use of state disaster relief funds.

[24] Decision No. 61833, dated July 20, 1999.

1 Q. What would be the effect of a 30 basis point increase, such as the one

2   granted to Park Water by the CPUC, to your cost of capital to Arizona

3   Water?

4 A. A 30 basis point increase to my recommended cost of common equity

5   would raise my recommended overall weighted cost of capital from 8.68

6   percent to 8.88 percent. While my recommended 8.68 percent rate of

7   return may be lower than returns realized by Arizona Water since the

8   Company's last authorized rate increase, it has to be remembered that my

9   recommended 8.44 percent cost of long-term debt is 173 basis points

10   lower than the 10.17 percent cost of long-term debt authorized by the

11   Commission in December 1992. This is largely due to the steady decline

12   in interest rates over the past eleven years which Arizona Water has taken

13   advantage of in its decision to refinance older higher cost long-term debt

14   instruments (i.e. the Company's Series G bonds).

15

16 **Historical Test Year Concept Practiced in Arizona**

17 Q. Please discuss risk in the context of the Company's regulatory climate in

18   Arizona.

19 A. The regulatory climate that a utility must operate in has always been

20   considered as a potential source of risk when determining the rate of

21   return that a utility is entitled to. In my opinion, the regulatory climate that

22   Arizona Water is operating in has never been more favorable to water

1   utilities. Over the past seven years, the federal reauthorization of the Safe

2   Drinking Water Act ("SDWA") has provided federal funds from which a

3   state revolving fund has been established. The fund, administered in

4   Arizona by the Water Infrastructure Authority ("WIFA"), has been set up to

5   provide low interest rate loans to water utilities that want to make

6   improvements to their systems. Unlike other states, such as Indiana,

7   which has in the past, exercised its discretionary power to limit the

8   distribution of that state's share of federal monies to public systems only,

9   Arizona has encouraged both public and investor owned systems like

10   Arizona Water to apply for WIFA loans. Although an Arizona-based water

11   provider might not wish to take advantage of loans offered by WIFA (for

12   whatever reasons decided on by the water provider's management) that

13   does not change the fact that low interest financing is available to the

14   water provider through the WIFA program. The ADEQ's Monitoring

15   Assistance Program ("MAP") is also now in place to aid water utilities on

16   their water testing needs.

17

18   Q.   Can you cite any recent events that would support your claim that Arizona

19   is a favorable jurisdiction for water utilities?

20   A.   Yes. American Water Works was recently acquired by RWE, a large

21   German conglomerate. Prior to becoming a part of RWE, American Water

22   Works (which owns Arizona American Water Company in Paradise Valley)

1   acquired the Sun City water and wastewater operations that were put up

2   for sale by Citizens Utilities. American States Water Co. ("American

3   States"), one of the firms included in my proxy, acquired Chaparral City

4   Water Company in Fountain Hills. This acquisition is noteworthy since it

5   marked the first time that American States had acquired a system outside

6   of California. Southwest Gas recently expanded its operations in Arizona

7   by acquiring Black Mountain Gas and UniSource Energy acquired the

8   electric and gas operations of Citizens Utilities. I don't believe that any of

9   these public utility holding companies would have expanded in Arizona if

10   they believed they were going to have to face a harsh regulatory climate.

11

12 Q.   Are there other facts that would indicate that the Arizona jurisdiction is not

13   as risky as the Company would want one to believe?

14 A.   One of the interesting things which I discovered while reviewing the CPUC

15   documents were the various aspects of California regulation which have

16   not even been major issues in the water utility proceedings that I have

17   been involved with in Arizona. This includes rigid caps on management

18   salary levels and strict policies that allow utilities to recover only fifty

19   percent of their fixed operating costs through minimum monthly service

20   charges. During the CPUC OII proceedings, Park Water expressed

21   displeasure over being subject to an imputed capital structure, which is

22   also rare in the case of water utility proceedings in Arizona. These

1   examples indicate that the Arizona jurisdiction is not as unfavorable as

2   many utility consultants would lead you to believe.

3

4   **New Environmental Protection Agency Standards for Arsenic**

5   Q.   Please respond to the risks posed to Arizona Water due to revised arsenic

6   standards for drinking water that are being proposed by the Environmental

7   Protection Agency ("EPA")?

8   A.   A decision is now pending on an arsenic recovery mechanism that will

9   allow Arizona Water to recover costs associated with the removal of

10   arsenic in the Company's affected systems. This would include the

11   Apache Junction, Superior and San Manuel systems in this proceeding.

12   Given this fact, any additional return on investment for revised arsenic

13   standards would not be warranted.

14

15   Q.   Are there any final remarks that you would like to make regarding your

16   recommended cost of capital for Arizona Water?

17   A.   Yes. I would like to reiterate my firm belief that the water utilities (with

18   betas in the 0.60 to 0.70 range) that were included in my DCF and CAPM

19   sample fit the Hope decision definition of "other investments with

20   comparable risk." I further believe that the utilities included in my sample

21   closely resemble Arizona Water in terms of both an operating and risk

22   standpoint. In addition, the relatively high equity ratio of the capital

1 structure proposed by both the Company and myself, takes into account

2 any risk differentials that Arizona Water may be exposed to.

3

4 Q. Does your silence on any of the issues, matters or findings addressed in

5 the testimony of Dr. Zepp or other witnesses for Arizona Water constitute

6 your acceptance of their positions on such issues, matters or findings?

7 A. No, it does not.

8

9 Q. Does this conclude your testimony on Arizona Water's Eastern Group?

10 A. Yes, it does.

Qualifications of William A. Rigsby

EDUCATION: University of Phoenix
Master of Business Administration, Emphasis in Accounting, 1993

Arizona State University
College of Business
Bachelor of Science, Finance, 1990

Mesa Community College
Associate of Applied Science, Banking and Finance, 1986

Michigan State University
Institute of Public Utilities
N.A.R.U.C. Annual Regulatory Studies Program, 1997 &1999

Florida State University
Center for Professional Development & Public Service
N.A.R.U.C. Annual Western Utility Rate School, 1996

EXPERIENCE: Public Utilities Analyst V
Residential Utility Consumer Office
Phoenix, Arizona
April 2001 – Present

Senior Rate Analyst
Accounting & Rates - Financial Analysis Unit
Arizona Corporation Commission, Utilities Division
Phoenix, Arizona
July 1999 – April 2001

Senior Rate Analyst
Residential Utility Consumer Office
Phoenix, Arizona
December 1997 – July 1999

Utilities Auditor II and III
Accounting & Rates – Revenue Requirements Analysis Unit
Arizona Corporation Commission, Utilities Division
Phoenix, Arizona
October 1994 – November 1997

Revenue Auditor II
Arizona Department of Revenue
Corporate Income Tax Audit Unit
Phoenix, Arizona
November 1993 – October 1994

Tax Examiner Technician I
Arizona Department of Revenue
Transaction Privilege Tax Audit Unit
Phoenix, Arizona
July 1991 – November 1993

RESUME OF RATE CASE AND REGULATORY PARTICIPATION

Utility Company	Docket No.	Type of Proceeding
ICR Water Users Association	U-2824-94-389	Original CC&N
Rincon Water Company	U-1723-95-122	Rate Increase
Ash Fork Development Association, Inc.	E-1004-95-124	Rate Increase
Parker Lakeview Estates Homeowners Association, Inc.	U-1853-95-328	Rate Increase
Mirabell Water Company, Inc.	U-2368-95-449	Rate Increase
Bonita Creek Land and Homeowner's Association	U-2195-95-494	Rate Increase
Pineview Land & Water Company	U-1676-96-161	Rate Increase
Pineview Land & Water Company	U-1676-96-352	Financing
Montezuma Estates Property Owners Association	U-2064-96-465	Rate Increase
Houghland Water Company	U-2338-96-603 et al	Rate Increase
Sunrise Vistas Utilities Company – Water Division	U-2625-97-074	Rate Increase
Sunrise Vistas Utilities Company – Sewer Division	U-2625-97-075	Rate Increase
Holiday Enterprises, Inc. dba Holiday Water Company	U-1896-97-302	Rate Increase
Gardener Water Company	U-2373-97-499	Rate Increase
Cienega Water Company	W-2034-97-473	Rate Increase
Rincon Water Company	W-1723-97-414	Financing/Auth. To Issue Stock
Vail Water Company	W-01651A-97-0539 et al	Rate Increase
Bermuda Water Company, Inc.	W-01812A-98-0390	Rate Increase
Bella Vista Water Company	W-02465A-98-0458	Rate Increase
Pima Utility Company	SW-02199A-98-0578	Rate Increase

RESUME OF RATE CASE AND REGULATORY PARTICIPATION (Cont.)

Utility Company	Docket No.	Type of Proceeding
Pineview Water Company	W-01676A-99-0261	WIFA Financing
I.M. Water Company, Inc.	W-02191A-99-0415	Financing
Marana Water Service, Inc.	W-01493A-99-0398	WIFA Financing
Tonto Hills Utility Company	W-02483A-99-0558	WIFA Financing
New Life Trust, Inc. dba Dateland Utilities	W-03537A-99-0530	Financing
GTE California, Inc.	T-01954B-99-0511	Sale of Assets
Citizens Utilities Rural Company, Inc.	T-01846B-99-0511	Sale of Assets
MCO Properties, Inc.	W-02113A-00-0233	Reorganization
American States Water Company	W-02113A-00-0233	Reorganization
Arizona American Water Company	W-01303A-00-0327	Financing
Arizona Electric Power Cooperative	E-01773A-00-0227	Financing
360networks (USA) Inc.	T-03777A-00-0575	Financing
Beardsley Water Company, Inc.	W-02074A-00-0482	WIFA Financing
Mirabell Water Company	W-02368A-00-0461	WIFA Financing
Rio Verde Utilities, Inc.	WS-02156A-00-0321 et al	Rate Increase/ Financing
Arizona Water Company	W-01445A-00-0749	Financing
Loma Linda Estates, Inc.	W-02211A-00-0975	Rate Increase
Arizona Water Company	W-01445A-00-0962	Rate Increase
Mountain Pass Utility Company	SW-03841A-01-0166	Financing
Picacho Sewer Company	SW-03709A-01-0165	Financing
Picacho Water Company	W-03528A-01-0169	Financing
Ridgeview Utility Company	W-03861A-01-0167	Financing
Green Valley Water Company	W-02025A-01-0559	Rate Increase
Bella Vista Water Company	W-02465A-01-0776	Rate Increase

ARIZONA WATER COMPANY
EASTERN GROUP
DOCKET NO. W-01445A-02-0619
TABLE OF CONTENTS TO SCHEDULES WAR

ARIZONA WATER COMPANY
TEST YEAR ENDED DECEMBER 31, 2001
COST OF CAPITAL SUMMARY

LINE NO.	DESCRIPTION	(A) CAPITALIZATION PER COMPANY	(B) RUCO ADJUSTMENTS	(C) RUCO ADJUSTED CAPITALIZATION	(D) CAPITAL RATIO	(E) COST	(F) WEIGHTED COST
1	SHORT-TERM DEBT	$ 2,850,000	$ 1,650,000	$ 4,500,000	5.62%	4.00%	0.22%
2	LONG-TERM DEBT	23,000,677	(400,677)	22,600,000	28.24%	8.44%	2.38%
3	COMMON EQUITY	49,442,738	3,473,716	52,916,454	66.13%	9.18%	6.07%
4	TOTAL CAPITALIZATION	$ 75,293,415	$ 4,723,039	$ 80,016,454	100.00%		
5	COST OF CAPITAL						8.68%

REFERENCES:
COLUMN (A): COMPANY SCH. D-1
COLUMN (B): TESTIMONY, WAR
COLUMN (C): COLUMN (A) + COLUMN (B)
COLUMN (D): COLUMN (C) ÷ COLUMN (C), LINE 5
COLUMN (E): TESTIMONY, WAR
COLUMN (F): COLUMN (D) x COLUMN (E)

ARIZONA WATER COMPANY
TEST YEAR ENDED DECEMBER 31, 2001
COST OF DEBT

DOCKET NO. W-01445A-02-0619
SCHEDULE WAR - 2

LINE NO	DESCRIPTION	(A) TEST YEAR AMOUNT	(B) RUCO ADJUSTMENTS	(C) RUCO ADJUSTED	(D) LONG-TERM DEBT RATIO	(E) COST OF DEBT	(F) WEIGHTED COST
1	SERIES I, 9.25% GENERAL MORTGAGE BONDS DUE 2006	$ 2,000,000	$ (400,000)	$ 1,600,000	7.08%	9.3070%	0.66%
2	SERIES J, 9.13% GENERAL MORTGAGE BONDS DUE 2015	6,000,000	-	6,000,000	26.55%	9.1769%	2.44%
3	SERIES K, 8.04% GENERAL MORTGAGE BONDS DUE 2031	15,000,000	-	15,000,000	66.37%	8.0538%	5.35%
4	BANK OF AMERICA LINE OF CREDIT	677	(677)	-	0.00%	5.0000%	0.00%
5	TOTAL LONG-TERM DEBT	$ 23,000,677	$ (400,677)	$ 22,600,000	100.00%		8.44%

REFERENCES:
COLUMN (A): COMPANY SCHEDULE D-2
COLUMN (B): TESTIMONY, WAR
COLUMN (C): COLUMN (A) + COLUMN (B)
COLUMN (D): COLUMN (C) ÷ COLUMN (C), LINE 6
COLUMN (E): TESTIMONY, WAR
COLUMN (F): COLUMN (D) x COLUMN (E)

ARIZONA WATER COMPANY
TEST YEAR ENDED DECEMBER 31, 2001
DCF COST OF EQUITY CAPITAL

LINE NO.	STOCK SYMBOL	COMPANY	(A) DIVIDEND YIELD		(B) GROWTH RATE (g)		(C) DCF COST OF EQUITY CAPITAL
1	AWR	AMERICAN STATES WATER CO.	3.41%	+	4.70%	=	8.11%
2	CWT	CALIFORNIA WATER SERVICE GROUP	4.03%	+	4.19%	=	8.22%
3	PSC	PHILADELPHIA SUBURBAN CORP.	2.43%	+	8.80%	=	11.23%
4		WATER COMPANY AVERAGE					9.18%

REFERENCES:
COLUMN (A): SCHEDULE WAR - 4, COLUMN C
COLUMN (B): SCHEDULE WAR - 5, PAGE 1, COLUMN C
COLUMN (C): COLUMN (A) + COLUMN (B)

ARIZONA WATER COMPANY
TEST YEAR ENDED DECEMBER 31, 2001
DIVIDEND YIELD CALCULATION

LINE NO.	STOCK SYMBOL	COMPANY	(A) ESTIMATED DIVIDEND (PER SHARE)		(B) AVERAGE STOCK PRICE (PER SHARE)		(C) DIVIDEND YIELD
1	AWR	AMERICAN STATES WATER CO.	$0.88	÷	$25.96	=	3.41%
2	CWT	CALIFORNIA WATER SERVICE GROUP	1.12	÷	27.91	=	4.03%
3	PSC	PHILADELPHIA SUBURBAN CORP.	0.56	÷	23.08	=	2.43%
4		WATER COMPANY AVERAGE					3.29%

REFERENCES:
COLUMN (A): ESTIMATED 12 MONTH DIVIDEND REPORTED IN VALUE LINE INVESTMENT
SURVEY - SUMMARY AND INDEX DATED 05/02/03.
COLUMN (B): EIGHT WEEK AVERAGE OF CLOSING PRICES FROM 04/21/03 TO 06/13/03
STOCK QUOTES OBTAINED THROUGH BIG CHARTS WEB SITE -
HISTORICAL QUOTES (www.bigcharts.com).
COLUMN (C): COLUMN (A) ÷ COLUMN (B)

ARIZONA WATER COMPANY
TEST YEAR ENDED DECEMBER 31, 2001
DIVIDEND GROWTH RATE CALCULATION

LINE NO.	STOCK SYMBOL	COMPANY	(A) INTERNAL GROWTH (br)		(B) EXTERNAL GROWTH (sv)		(C) DIVIDEND GROWTH (g)
2	AWR	AMERICAN STATES WATER CO.	4.60%	+	0.10%	=	4.70%
3	CWT	CALIFORNIA WATER SERVICE GROUP	3.75%	+	0.44%	=	4.19%
4	PSC	PHILADELPHIA SUBURBAN CORP.	7.00%	+	1.80%	=	8.80%
5		WATER COMPANY AVERAGE					5.90%

REFERENCES:
COLUMN (A): TESTIMONY, WAR
COLUMN (B): SCHEDULE WAR - 5, PAGE 2, COLUMN C
COLUMN (C): COLUMN (A) + COLUMN (B)

ARIZONA WATER COMPANY
TEST YEAR ENDED DECEMBER 31, 2001
DIVIDEND GROWTH RATE CALCULATION

LINE NO.	STOCK SYMBOL	COMPANY	(A) SHARE GROWTH		(B)		(C) EXTERNAL GROWTH (sv)
2	AWR	AMERICAN STATES WATER CO.	0.25%	x	{ [[((M ÷ B) + 1) ÷ 2] - 1 } =		0.10%
					{ [[((1.82) + 1) ÷ 2] - 1 } =		
3	CWT	CALIFORNIA WATER SERVICE GROUP	1.00%	x	{ [[((1.89) + 1) ÷ 2] - 1 } =		0.44%
4	PSC	PHILADELPHIA SUBURBAN CORP.	1.75%	x	{ [[((3.06) + 1) ÷ 2] - 1 } =		1.80%

REFERENCES:
COLUMN (A): TESTIMONY, WAR
COLUMN (B): VALUE LINE INVESTMENT SURVEY, 05/04/01
COLUMN (C): COLUMN (A) x COLUMN (B)

ARIZONA WATER COMPANY
TEST YEAR ENDED DECEMBER 31, 2001
DIVIDEND GROWTH COMPONENTS

LINE NO.	STOCK SYMBOL	COMPANY	OPERATING PERIOD	(A) RETENTION RATIO (b)	x	(B) RETURN ON BOOK EQUITY (r)	=	(C) DIVIDEND GROWTH (g)	(D) BOOK VALUE ($/SHARE)	(E) SHARES OUTST. (MILLIONS)	(F) SHARE GROWTH
1	AWR	AMERICAN STATES WATER CO.	1998	0.2222	x	9.40%	=	2.09%	11.48	13.44	
2			1999	0.2857		10.10%		2.89%	11.82	13.44	
3			2000	0.3281		9.30%		3.05%	12.74	15.12	
4			2001	0.3556		10.10%		3.59%	13.22	15.12	
5			2002	0.3507		9.50%		3.33%	14.05	15.18	
6			GROWTH 1998 - 2002					2.99%	4.00%		3.09%
7			2003	0.3481		9.00%		3.13%		16.80	10.67%
8			2004	0.3793		9.50%		3.60%		16.80	5.20%
9			2006-08	0.4703		10.50%		4.94%	5.00%	16.80	2.05%
10											
11	CWT	CALIFORNIA WATER SERVICE GROUP	1998	0.2621		10.80%		2.83%	13.38	12.62	
12			1999	0.2876		11.40%		3.28%	13.43	12.62	
13			2000	0.1603		10.10%		1.62%	12.90	15.15	
14			2001	-0.1915		7.20%		-1.38%	12.95	15.18	
15			2002	0.1040		9.50%		0.99%	13.12	15.18	
16			GROWTH 1998 - 2002					1.47%	1.00%		4.73%
17			2003	-0.0455		7.50%		-0.34%		17.00	11.99%
18			2004	0.2138		9.00%		1.92%		18.80	11.29%
19			2006-08	0.3949		10.00%		3.95%	7.00%	18.80	4.37%
20											
21	PSC	PHILADELPHIA SUBURBAN CORP.	1998	0.3485		12.40%		4.32%	5.34	43.32	
22			1999	0.3571		12.30%		4.39%	5.71	64.08	
23			2000	0.3974		11.70%		4.65%	6.42	67.10	
24			2001	0.4118		12.40%		5.11%	6.91	68.39	
25			2002	0.4000		12.70%		5.08%	7.26	67.92	
26			GROWTH 1998 - 2002					4.71%	9.00%		11.90%
27			2003	0.4300		13.50%		5.81%		69.00	1.59%
28			2004	0.4545		14.00%		6.36%		70.50	1.88%
29			2006-08	0.5172		15.00%		7.76%	6.50%	75.00	2.00%

REFERENCES:
COLUMNS (A) & (B): VALUE LINE INVESTMENT SURVEY
   - RATINGS & REPORTS DATED 05/02/03

COLUMN (C): COLUMN (A) x COLUMN (B)
COLUMN (C): LINES 6, 16 & 26, SIMPLE AVERAGE GROWTH, 1998 - 2002

COLUMN (D): VALUE LINE INVESTMENT SURVEY
COLUMN (D): LINES 6, 16 & 26, COMPOUND GROWTH RATE
COLUMN (E): VALUE LINE INVESTMENT SURVEY
COLUMN (F): COMPOUND GROWTH RATES OF DATES SHOWN

ARIZONA WATER COMPANY
TEST YEAR ENDED DECEMBER 31, 2001
GROWTH RATE COMPARISON

LINE NO.	STOCK SYMBOL	(A) (br)+(sv)	(B) ZACKS EPS	(C) VALUE LINE PROJECTED EPS	DPS	BVPS	(D) VALUE LINE HISTORIC EPS	DPS	BVPS	(E) VALUE LINE & ZACKS AVGS.	(F) 5-YEAR COMPOUND HISTORY EPS	DPS	BVPS
1	AWR	4.70%	4.50%	6.00%	2.00%	5.00%	4.50%	1.00%	4.00%	3.86%	5.54%	0.88%	5.18%
2													
3	CWT	4.19%	5.00%	9.00%	1.00%	7.00%	-5.00%	1.50%	1.00%	2.79%	-3.64%	1.15%	-0.49%
4													
5	PSC	8.80%	8.20%	10.00%	5.50%	6.50%	10.00%	6.00%	9.00%	7.89%	8.06%	5.86%	7.98%
6													
7				8.33%	2.83%	6.17%	3.17%	2.83%	4.67%		3.32%	2.63%	4.22%
8													
9	AVERAGES	5.90%	5.90%		5.78%			3.56%		4.84%		3.39%	

REFERENCES:
COLUMN (A): SCHEDULE WAR - 5, PAGE 1, COLUMN C
COLUMN (B): ZACKS INVESTMENT RESEARCH (www.zacks.com)
COLUMN (C): VALUE LINE INVESTMENT SURVEY - RATINGS & REPORTS DATED 05/02/03
COLUMN (D): VALUE LINE INVESTMENT SURVEY - RATINGS & REPORTS DATED 05/02/03
COLUMN (E): SIMPLE AVERAGE OF COLUMNS (B) THRU (D) LINES 1, 3, 5 AND 7
COLUMN (F): 5-YEAR ANNUAL GROWTH RATE CALCULATED WITH DATA COMPILED FROM
             - VALUE LINE INVESTMENT SURVEY - RATINGS & REPORTS DATED 05/02/03

BASED ON A GEOMETRIC MEAN:

LINE NO.	STOCK SYMBOL	(A)														(B) EXPECTED RETURN
		k	=	r_f	+	[	ß	x	(	r_m	-	r_f	)	]	=	
1	AWR	k	=	0.91%			0.60	x	(	10.20%	-	0.91%	)	]	=	6.48%
2	CWT	k	=	0.91%	+	[	0.60	x	(	10.20%	-	0.91%	)	]	=	6.48%
3	PSC	k	=	0.91%	+	[	0.70	x	(	10.20%	-	0.91%	)	]	=	7.41%
4	AVERAGE						0.63									6.79%

REFERENCES:
COLUMN (A): GENERAL CAPITAL ASSET PRICING MODEL (CAPM) FORMULA

$$k = r_f + [\, \beta \, (r_m - r_f) \,]$$

WHERE: k = THE EXPECTED RETURN ON A GIVEN SECURITY
        r_f = RATE OF RETURN ON A RISK FREE ASSET PROXY (a)
        ß = THE BETA COEFFICIENT OF A GIVEN SECURITY
        r_m = PROXY FOR THE MARKET RATE OF RETURN (b)

COLUMN (B): EXPECTED RATE OF RETURN USING THE CAPM FORMULA

NOTES

(a) AN AVERAGE OF THE 91-DAY T-BILL RATE (6-WEEK AVG.) AND THE 91-DAY T-BILL FUTURES
     RATE THAT APPEARED IN THE 06/20/03 COPY OF THE WALL STREET JOURNAL WAS USED
     AS A RISK FREE RATE OF RETURN.

(b) THE MARKET RATE PROXY USED WAS THE GEOMETRIC MEAN FOR S&P 500 RETURNS
     OVER THE 1926 - 2002 PERIOD. THE DATA WAS OBTAINED FROM IBBOTSON ASSOCIATES'
     STOCKS, BONDS, BILLS AND INFLATION: 2002 YEARBOOK.

BASED ON AN ARITHMETIC MEAN:

LINE NO.	STOCK SYMBOL	(A) k	=	r_f	+ [	β	x (	r_m	-	r_f	)] =	(B) EXPECTED RETURN
1	AWR	k	=	0.91%	+ [	0.60	x (	12.20%	-	0.91%	)] =	7.68%
2	CWT	k	=	0.91%	+ [	0.60	x (	12.20%	-	0.91%	)] =	7.68%
3	PSC	k	=	0.91%	+ [	0.70	x (	12.20%	-	0.91%	)] =	8.81%
4	AVERAGE					0.63						8.06%

REFERENCES:
COLUMN (A): GENERAL CAPITAL ASSET PRICING MODEL (CAPM) FORMULA

$$k = r_f + [\, \beta \, (r_m - r_f) \,]$$

WHERE: k = THE EXPECTED RETURN ON A GIVEN SECURITY
r_f = RATE OF RETURN ON A RISK FREE ASSET PROXY (a)
β = THE BETA COEFFICIENT OF A GIVEN SECURITY
r_m = PROXY FOR THE MARKET RATE OF RETURN (b)

COLUMN (B): EXPECTED RATE OF RETURN USING THE CAPM FORMULA

NOTES

(a) AN AVERAGE OF THE 91-DAY T-BILL RATE (6-WEEK AVG.) AND THE 91-DAY T-BILL FUTURES
RATE THAT APPEARED IN THE 06/20/03 COPY OF THE WALL STREET JOURNAL WAS USED
AS A RISK FREE RATE OF RETURN.

(b) THE MARKET RATE PROXY USED WAS THE GEOMETRIC MEAN FOR S&P 500 RETURNS
OVER THE 1926 - 2002 PERIOD. THE DATA WAS OBTAINED FROM IBBOTSON ASSOCIATES'
STOCKS, BONDS, BILLS AND INFLATION: 2002 YEARBOOK.

ARIZONA WATER COMPANY
TEST YEAR ENDED DECEMBER 31, 2001
ECONOMIC INDICATORS - 1990 TO PRESENT

LINE NO.	YEAR	(A) CHANGE IN CPI	(B) CHANGE IN GDP (1996 $)	(C) PRIME RATE	(D) FED. DISC. RATE	(E) FED. FUNDS RATE	(F) 91-DAY T-BILLS	(G) 30-YR T-BONDS	(H) Aa-RATED UTIL. BOND YIELD	(I) A-RATED UTIL. BOND YIELD	(J) Baa-RATED UTIL. BOND YIELD
1	1990	5.40%	0.46%	10.01%	6.98%	8.10%	7.49%	8.61%	9.65%	9.86%	10.06%
2	1991	4.20%	0.85%	8.46%	5.45%	5.69%	5.38%	8.14%	9.09%	9.36%	9.55%
3	1992	3.00%	4.01%	6.25%	3.25%	3.52%	3.43%	7.67%	8.55%	8.69%	8.86%
4	1993	3.00%	2.55%	6.00%	3.00%	3.02%	3.00%	6.60%	7.44%	7.59%	7.91%
5	1994	2.60%	4.08%	7.14%	3.60%	4.20%	4.25%	7.37%	8.21%	8.31%	8.63%
6	1995	2.80%	2.16%	8.83%	5.21%	5.84%	5.49%	6.88%	7.77%	7.89%	8.29%
7	1996	3.00%	4.06%	8.27%	5.02%	5.30%	5.01%	6.70%	7.57%	7.75%	8.17%
8	1997	2.30%	4.31%	8.44%	5.00%	5.46%	5.06%	6.61%	7.66%	7.60%	8.12%
9	1998	1.60%	4.61%	8.35%	4.92%	5.35%	4.78%	5.58%	6.91%	7.04%	7.27%
10	1999	2.20%	4.96%	7.99%	4.62%	4.97%	4.64%	5.86%	7.51%	7.62%	7.88%
11	2000	3.40%	3.41%	9.23%	5.73%	6.24%	5.82%	5.94%	8.06%	8.24%	8.36%
12	2001	2.80%	0.05%	6.92%	3.41%	3.88%	3.38%	5.95%	7.98%	7.59%	8.02%
13	2002	1.58%	2.91%	4.67%	1.17%	1.66%	1.60%	5.38%	7.17%	7.41%	7.98%
14	CURRENT	2.00%	0.47%	4.00%	2.00%	1.00%	0.88%	4.56%	6.01%	6.04%	6.13%

REFERENCES:
COLUMN (A): 1990 - 2002, U.S. DEPARTMENT OF LABOR, BUREAU OF LABOR STATISTICS WEB SITE
COLUMN (B): 1990 - 2002, U.S. DEPARTMENT OF COMMERCE, BUREAU OF ECONOMIC ANALYSIS WEB SITE
COLUMN (C) THROUGH (G): 1990 - 2002, FEDERAL RESERVE BANK OF ST. LOUIS WEB SITE

ARIZONA WATER COMPANY
TEST YEAR ENDED DECEMBER 31, 2001
CAPITAL STRUCTURES OF PUBLICLY TRADED WATE (IN MILLIONS)

LINE NO.		AWR	PCT.	CWT	PCT.	PSC	PCT.	AVERAGE	PCT.
1	SHORT-TERM DEBT	$13.0	2.9%	$36.4	7.4%	$115.1	9.8%	$55	7.8%
2	LONG-TERM DEBT *	235.5	51.6%	251.4	51.3%	617.2	52.6%	$368	52.1%
3	PREFERRED STOCK	0.0	0.0%	3.5	0.7%	1.7	0.1%	$2	0.2%
4	COMMON EQUITY	207.6	45.5%	199.2	40.6%	439.1	37.4%	282	39.9%
5	TOTALS	$456.1	100%	$490.4	100%	$1,173.1	100%	$707	100%

NOTE:
* INCLUDES CURRENT PORTION OF LONG-TERM DEBT

REFERENCES:
YEAR 2002 ANNUAL REPORTS TO SHAREHOLDERS AND 10-K FILINGS TO THE U.S. SECURITIES AND EXCHANGE COMMISSION